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VIRTUAL REALITY AS A PROBLEM OF THE ELECTRONIC ECONOMY

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Virtual Reality as a Problem of the Electronic Economy*

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Abstract.

Two concepts of virtual reality are competing in the cyber world, virtual reality as total adaptability and virtual reality as the simulation of possible worlds. Virtuality as adaptability in industrial production leads to a closer consideration of individual consumer demand and to de-massified production. It implies a stronger reference of production to the reality of consumer needs. The aesthetic concept of virtual reality as possible words and fictional realities can imply a loss of reality. Both concepts of virtuality interact, however. Adaptive production needs the experimentation of imagined and simulated possible worlds. Virtual reality leads to a disembodiment of experience and to the danger of the loss of the validation of perception by experience. The concept of the virtual is originally a concept of theological origin, signifying invisible but real potentiality or a reality that is real only as potentiality. One of the most important innovations of the virtual reality of the internet has taken place in financial markets in online trading and online brokerage. The virtual reality of the internet financial markets enables large strata of the population to participate in stock market speculation, leading to a kind of people's capitalism. Problems caused by the virtual character of the transactions in online trading are the churning of traders and the over-trading of shares by investors.

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Virtual Reality as a Problem of the Electronic Economy

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I. Two Concepts of Virtuality

In the discussion on the concept of virtuality two different meanings of virtual are used: 'Virtual' means on the one hand the immediately possible, the being effective in concealment, the powerful but not visible, and on the other hand what is only seemingly existent and possible only in play or in fiction. There are used here quite different meanings of the virtual if virtual is on the one hand what is only seemingly true and on the other hand what is possible in an emphatic sense as the powerful. In the history of ideas, virtual indicates something that is real as potentiality, that is not only potential as potential. It is potentially real as something that is in an intensified way possible. Behind the distinction of being real as a possible and of being possible as a possible lies the observation that possibility and reality are not clearly separated discrete states or description of states or modi of being. Potentiality and reality rather form, as Leibniz demonstrated, a continuum from the possible to the real.

In a similar way, Schelling moved the idea of grades of the possible and virtual to the centre of his theory of the creative and of becoming in the theory of potencies or poten-

tialites in the last version of his philosophy, in his Positive Philosophy.[1] In his theory of potencies, Schelling writes that the potencies are there before there is being. He develops a dialectics of different kinds of potencies and calls that which is able to be that which is closest to being, closest to that which is real. There are different consecutive states of potential being. Among these states of potential being, the potential being that is able to be immediately is the one that is the closest of the three potencies to being. It is almost about to transcend into being whereas there is potential being which is much further away from being. Schelling distinguishes between the above-being, the able-to-be, and the being. The above-being moves through the able-to-be into being. That which is merely existent without all qualifications is at the same time that which is only possible, which is not yet being but above-being and before-being.

The above-being, the merely existent has at the same time a theological meaning in Schelling. Philosophy must think the purely existent. It must start with pure existence. It cannot in contrast to Hegel's theory of dialectics think that the pure nothingness is the beginning of a dialectic of becoming, of the transcendence from nothingness to being. We must start from the above-being, the merely existent without any concretization which then determines itself by way of the different modes of the possible into being.

The idea that there exists something which is immediately before being, the potential or the able-to-be which is of all potencies or potentialities the one that is closest to being is useful not only for metaphysics but also for the cyberspace. In the cyberspace, there are two types of the virtual, two potentialities, first the potentiality or the able-to-be that is of all potentialities the one that is closest to being, and secondly the potential or able-to-be that is only fictitious and far from being. The cyberspace is a space of the above-being, of the possible before being. It is as well a space of the possible as the real which can be transformed at any time from the potential to the real as a space of the above-being that is still far from being able to become real.

The cyberspace is therefore not mere potentiality, but it is a specific, well-defined potentiality which can be transformed any time into being. The internet is a blueprint, a sketch of a technology which can be realised at once as reality. This function of the cyberspace as being a space of the economically possible as real or as the economically

1 Cf. to Schelling P. KOSLOWSKI: *Philosophien der Offenbarung. Antiker Gnostizismus, Franz von Baader, Schelling*, Paderborn (Ferdinand Schöningh) 2001, 2nd ed. 2003, pp. 650-850.

feasible is of great significance for the virtual firm as Davidow and Malone have shown.[2] The internet opens the possibility to the firm to create a space of the potential which is not only possible in an unspecified way and is not only mere, unspecified potential but can be realised in real production at any time.

From the economic concept of the virtuality of the internet we must distinguish the aesthetical interpretation of the cyberspace. The aesthetic concept of the internet and the cyberspace understands the internet as a space of the possible as the possible, as a space of the simulation of reality in which simulation in play and in fiction is central.

It is necessary to distinguish between the aesthetical and the economic-technological and information-technological interpretation of the internet and of the electronic economy. Both interpretations understand the internet and the cyberspace as a space of the possible or potential. The difference is, however, considerable since the economy and firms are not interested in a general space of the possible, of simulation or of the virtual but in a space which can be transformed into reality at once and whose options are not at random, at will, or infinite, but are well-defined and tailored to the needs of the firm.

Davidow and Malone are right to define the internet as an actual structure of information and relationships that is not so much a medium of simulation but a concrete medium or a medium of concretization. It is therefore necessary to distinguish between the concept of virtuality that is at the foundations of the virtual firm, the ability to have a real systems technology in which the possible is real as the possible on the one hand, and the aesthetical concept of cyberspace in which the possible is possible as the possible.

II. Virtuality as Adaptability in the Business Firm

If one understands the virtual firm as a systems technology it is visible that the virtual world is ambivalent for the freedom of the user. It expands the user's options but it determines them also in detail. The problem can be analysed by recourse to the distinction between action and tool technology, machine technology and systems that Hubig

2 WILLIAM H. DAVIDOW, MICHAEL S. MALONE: *The Virtual Corporation: Structuring and Revitalizing the Corporation for the 21th Centur*y, New York (Harper Collins) 1992.

has introduced.[3] The different forms of technology have different consequences for the problem of action, freedom, and justification of technology. The technology of using tools is effective on the level of actions and possesses a high freedom of valuation which is only concretised by giving objectives to the use of the tools as means. It also implies the ability to control the means and the objectives as well as one's own abilities. It implies finally the control of reality by the individual.

In contrast to the technology of using tools, the degree of freedom decreases in the case of the machine and the systems technology at the rate at which the degree of effectiveness increases. In the technology of machines the objectives only are free and available but the connection between means and objectives is fixed by the construction of the machines. In the technology of machines, the goal of the technology is the availability and realisation of possibilities. The technological system and the systems technology fix even the objectives *and* the means of the systematic structure. Objectives and means can only be chosen or rejected as a whole. The systems technology determines the conditions for the use of tools and machines within an extended technological system of objectives-means-connections for the control of comprehensive problem situations. The infranet and internet of the virtual firm, its cyberspace, is a systems technology in which, in its ideal form, all possible options of the decision-maker are already premeditated, structured, and cared for. The decision-maker has only the freedom to realise this or that option that is possible as real not options he might choose beyond those prepared for in the system. Or the decision-maker has the option not to use the system as a whole at all. The employees in a virtual firm cannot invent new options by themselves. They are given to them in the software.

If one investigates the internet and the electronic economy according to the criteria of forms of technology and their different degrees of freedom it becomes visible that the internet is in a way the most universal system or net of information and relationships into which almost all information and relationships enter to an increasing degree. If with the increasing spread of systems technology the freedom decreases to use this technology as a means or to choose oneself the objectives for which to use this technology, this must apply also to the internet. The functional relationship of the reliance on systems

3 CHRISTOPH HUBIG: *Technik- und Wissenschaftsethik: ein Leitfaden*, Berlin, Heidelberg, New York (Springer), 1st ed. 1993, 2nd ed. 1995, pp. 58ff. – Cf. also KLAUS MAINZER: *Computer – neue Flügel des Geistes?*, Berlin, New York (de Gruyter) 1994.

and the decreasing freedom of setting one's own objectives in using this technology and the decreasing freedom not to use it at all is effective also for the internet: The more the internet is in fact the most universal system of information and relationships the less I have the freedom not to participate in the internet. This development is the deeper concern with the digital divide: It consists not primarily in distributional questions whether some people own a computer or not. The digital divide concerns the danger that the exclusion from the internet will more and more imply the exclusion from the central media of communication. If the internet is the most universal system of communication I am outside of the realm of communication if I am not in the internet. The individual has no degree of freedom anymore in the question whether it can use the media internet or not. The individual must use the internet as the most universal and most effective media of communication to be part of social communication at all.[4]

For this reason the internet needs to be free as the most universal and most effective media of communication. The postulate that there should be no censorship in the internet is justified since the internet is not one media but it is *the* media. In the long run the internet will not be one media beside others but the universal media. As this universal media the internet is virtual not as a mere simulation or possible world but it is virtual as an invisible effective reality, as the reality of the possible, and not as the possibility of the possible. The cyberspace is not a virtual possibility but a virtual reality. The virtual firm is the user of this reality of the possible. The production of virtual products or the production of products with virtual means is the ideal form of a production in so far as it produces immediately and specifically in virtual reality. It must follow, however, the possibilities of the virtual reality as adaptive they might be. Production does not have great degrees of freedom from the media of the virtual possibilities given by the virtual reality of the firm. The production is determined by what is virtually real in the virtual reality. The virtual is the quality of something that can assume the qualities of many things. It is ascribed to a mode that is not real and not possible but the reality of the possible.

The concept of a virtual computer arose at the end of the 1950s in the context of machines that were fast enough that many people could work with them without having the

4 Cf. PETER GLOTZ: "Die Informationsgesellschaft: Deutsche Rahmenbedingungen, deutsche Hemmungen", *Informatik-Spektrum*, 22 (1999), for a discussion of the "Kulturkritik" on the Cyberspace. Glotz seems, however, to assume that we still have the choice to participate or not in the internet.

impression that they had to share the computer with others. Davidow and Malone claim that from this time the virtual is also understood as the adaptable or the interactive. Virtual means here over-adapted, highly adapted to the client. For the user the virtual computer was available at any place and any time and was therefore independent of time and space. It formed a virtual reality. Alvin Toffler introduced already in 1980 the idea of the "de-massified production".[5]

The precondition of the de-massification is, according to Toffler, that the development of computers becomes possible which can produce one mega-instruction per second at an acceptable price. The capacity of processing one mega-instruction per second had the price of one million Dollars in 1980. It was assumed in 1980 that the virtual production would become reality if this price of one million Dollars would fall to one hundred Dollars. This price of one hundred Dollars for one mega-instruction per second was reached at about 1992.

If one summarises the theories of the virtual firm one comes to the conclusion that, in the firm, "virtual" means first of all adaptable. Virtuality is formulated in terms of maximal adaptability or adaptedness to reality. In a certain way, the normative character of the real enforces itself in the virtual firm through and despite the concept of the virtual. It enforces the consideration of the real by the very fact that the virtual reality is not possible without the strict consideration of what the customer or consumer really wants. The normative reality of consumer demand is taken into account in the virtual firm even more than in the non-virtual firm. The customer demand is not replaced by simulations of this demand. Rather, the specificity of consumer demand is affirmed in a comprehensive way. The economic reality of the market is only perceived rightly by the firm if it is able to take up the needs of the customers in their specificity.

The consideration of the specificity of the fulfilment of consumer needs by the virtual production is, however, not the only problem of managing production. The firm must realise, at the same time, the economies of scale of mass production. The combination of individualisation and mass production is the truly revolutionary result of virtual production. The individualised mass production is the realisation of the synthesis of the opposites of individualisation and mass production.

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5 ALVIN TOFFLER: *The Third Wave* (1980), New York (Bantam Books) 1981, pp. 158ff. and 231ff. Toffler speaks of "de-massified media" and "de-massified Society".

Davidow and Malone point to the fact that this individualised mass production is most probably the origin of an increased stress in firms, a stress that is caused by the virtual production. The firm has to fulfil two parameters now: On the one hand it must reach high numbers of product units and cannot escape the compulsion to sell in great numbers, and at the same time the firm is forced to produce products that are oriented on the individual consumer. The production task does not become easier by the virtual production but more difficult. The tasks and demands on the employees become rather greater than smaller although the control of virtual production provides the firm with the means to deal with individualized consumer needs.

III. Virtuality as Simulation: The Aesthetic Concept of Virtuality

The economic concept of virtuality in production must be contrasted with the aesthetic concept of virtual reality. The aesthetic interpretation of virtual reality in contrast to the economic one can be found in a recent paper by Welsch. Welsch writes: "Thanks to our use of the medial realities we learn that reality has always been ... a construction."[6] The virtualisation in cyberspace causes a more virtual character of our everyday reality since it increases the virtual element as the fictitious and simulated element in our life. The increase of the virtual leads, according to Welsch, to the insight that reality as such is only a construction. One could reply that the thesis of the death of reality in cyberspace is strongly exaggerated. Particularly for the virtual firm, Welsch's thesis is untenable. The virtualisation of production causes a less virtual or fictional consideration of consumer demand since the reality of individual consumer demand becomes not less but more effective for the way in which goods are produced. Welsch himself qualifies, or even cancels, his own thesis when he says in the same book that a revalidating of reality happens through the virtualisation. He recognises that the thesis of the total dissolution of reality is not satisfying.

The aesthetic concept of virtual reality implies the fictionalisation and simulation of reality. It interprets reality as the result of fictions, of individual and commonly shared

6 W. WELSCH: „Eine Doppelfigur der Gegenwart: Virtualisierung und Revalidierung", in: G. VATTIMO, W. WELSCH (Eds.): *Medien-Welten Wirklichkeiten (*Media-Worlds Realities), München (W. Fink) 1998, pp. 229-248, here p. 241. (Translation P.K.)

fictions. In the aesthetic concept of virtuality, virtual reality implies that reality itself becomes a fiction. Fictions are not understood as a specific form of poetic perception, as the poetic deepening, intensification, and transformation of reality but as that which constitutes reality.

In a further step of reflection, the aesthetic and the economic concept of virtual reality can, however, be synthesized. The contradiction between virtuality as simulation and virtuality as the potential of total adaptation to reality can be overcome if the complementarity of industrial and artistic production is considered. The virtual reality as the space of the possible constitutes a potential complementarity between the arts and business. The arts are a field of experimentation of business in many industries: The arts develop new materials and designs. Virtual worlds precede in the arts their application in the mass production of industry.

On the other hand, the tension between the two cultures of the arts and of industry becomes visible at the two different concepts of virtual reality in industry and aesthetics which Daniel Bell has written about,[7] the tension between the culture of consumption and of the arts in which simulation, play, immediate gratification dominate and the culture of production and business in which, in contrast, adaptation, rationality and deferred gratification prevail. Bell sees the roots of this contrast in modern times and as an unsolvable problem of society.

Against the thesis of the modern character of the contradiction of the two cultures of consumption and production one can reply with Eduard Spranger[8] that the cultures of consumption and of production are always in contrast in human existence and that this contrast of consumption and production cannot be dissolved since both represent necessary sides of human existence.

A further insight can be gained from the ambivalence of the concept of virtual reality. The virtual world of playing with new possible worlds, the opening and the simulation of new possibilities, must also be present in business if it is to create innovation, new products and consumer satisfaction. In an advanced economy both concepts of virtuality have a function. The virtual production in systems of possible reality is in need of the artistic virtuality of the imagination of new real possibilities.

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7 DANIEL BELL: *Die kulturellen Widersprüche des Kapitalismus*, Frankfurt a. M. (Campus) 1991.

8 EDUARD SPRANGER: *Kulturphilosophie und Kulturkritik*, ed. by Hans Wenke, Tübingen (Niemeyer) 1969.

IV. The Ambivalence of the Virtual Character of the Cyberspace and of the Electronic Economy and the Problem of the Disembodiment by Virtual Reality

In the history of ideas, the concept of the virtual has first been developed in theology. It is a deeply theological concept. It has been developed in scholastic theology. In the theological and philosophical discussion, the ambivalence of the virtual as an invisible, yet potent, reality on the one hand and the virtual as mere appearance has been recognised. In this discussion, thinkers saw the necessity to revalidate the real beyond the fictitious and simulated. An interesting case of an intensive discussion about the virtual was the critique of simulation in the christology of the Gnostic theologians. The problem of virtual reality and embodiment becomes here apparent in its relevance. The Gnostics like Valentinus defended the interpretation that Christ had only an apparent body, a simulated or virtual body, as there are also other virtual bodies like those of angels and demons.[9]

The thesis that Christ's incarnation or embodiment was only virtual was criticized as follows: If incarnation is the central event of Christianity it cannot be the appearance of a virtual body as a simulated human body but it must be a real incarnation. Christ's body must, therefore, have been a real body. The Gnostics defended, however, the opinion that Christ has had only a spiritual flash, a *caro spiritalis*. Tertullian in turn replied in two arguments: First, Christ would not have become a real human if his flesh had not been real because humans cannot live separately from their body. Someone who wants to become a human must have a body, otherwise he is not a human. If someone has only a virtual or apparent body he has not become human in reality. His second argument is that the thesis of the virtual reality of Christ's body negates real and empirical humanity: If God had not become a corporeal human he would not have unified himself with humanity, he would have unified himself only with the virtual but not with the actual humanity. This would imply he has not unified himself with humanity at all.

For the philosophical discussion of the cyberspace, it is of interest that docetism, the theory that the body is only apparent or virtual, represented in the second century the

9 Demons must have a simulated body according to Valentinus since the can be castigated. If someone has no body he cannot be castigated. If one can castigate demons they must have a body, but their body can only be a virtual body.

heresy of the hatred or at least the contempt for the body and the flesh. In certain forms of the cyberspace and of virtual reality enthusiasm, a certain hatred or at least contempt for the corporeal existence of humans becomes visible. The corporeal existence is subordinated in the cyberworld to the virtual, the spiritual, and technological.

This is demonstrated in the movie film *Matrix*. In *Matrix*, the machines have made humanity their subjects by using the human corporeal existence for the mere production of energy. The humans, however, who live in a merely virtual cyberspace believe that they have a corporeal existence and live a real life in their body. In fact, however, the machines manipulated the humans in such a way that the appliances at the brains of the humans play a virtual reality to them which they mistake for reality. Their experiencing is a virtual reality whereas what is real, the corporeal existence of humans, is used by the machines for a completely different objective, the production of energy for the machines. The humans cannot recognize that the objective of their corporeal and spiritual existence is only the production of energy for others anymore.

The problem of immortality in the internet, or of immortality in a virtual reality, is linked to the phenomenon of the disembodiment of human experience in virtual reality. The new computer technology is obsessed with the idea to create immortality for the humans by the fusion of humans with computers. Bill Joy claims that all the brain data of a human should be stored on a chip and that the human body should be replaced by a computer that will not cost more than 1000 US $ in the year 2025 he predicts.[10] Humans store themselves on a memory chip and achieve immortality on a hard disc – and this at a comparably low amount for which a central European could hardly live decently for one month. Bill Joy quotes Danny Hillis: “I love my body neither more nor less than others but if I can become 200 years old in a body made of silicon I will accept this body.”[11] One could ask here: Why so modest? If we will have created a hard disc as our body we will be able to reproduce ourselves in all eternity on computers with the appropriate technology.

One must object that the continuity of the media which consciousness uses for its maintenance is not warranted here. We do not know what happens in the instant of a

10 So BILL JOY: „Warum die Technik uns nicht braucht. Die mächtigsten Technologien des 21. Jahrhunderts – Robotik, Gentechnik und Nanotechnologie – machen den Menschen zur gefährdeten Art“, *Frankfurter Allgemeine Zeitung*, 6. Juni 2000, pp. 49-50, here p. 50.

11 *Ibid*., p. 49. (translation P.K.)

nanosecond in which my self-consciousness moves from my body to the computer. It is likely that the continuity of the self as a unity of body and soul will be interrupted in this very moment. In modern technology, there is a tendency to devaluate and to aim at overcoming the body.

The technological utopias speak of the project of reconstructing the human and of replacing human organs by machines which secure immortality to humans since they become independent from the ageing of the body.[12] Such a utopia is only possible if one separates thinking, intelligence and consciousness completely from the body and takes consciousness to be a incorporeal unity as it was the case in Descartes' philosophy.[13] Other advanced technologists question, however, exactly this possibility of separating the mind from the body. They emphasize the unity of mind and body in contrast to the "technological idealism and spiritualism", that is characteristic of the optimism of the artificial intelligence thinkers.

A computer scientist like Rolf Pfeifer takes the idea to be wrong that intelligence is only a quality of computers and brains: Intelligence is not identical with the brain but a quality of the whole organism.[14] The robotics expert, Rodney A. Brooks, points to the fact that intelligence must be linked to the external world. The body is the connection of intelligence and consciousness in the human with the external world. Consciousness is not only external to the body. Intelligence is in need of the body to be able to interact with the world. Brooks speaks about "embodied intelligence".[15] From the need of the human to be "embodied intelligence", it is likely that humans will prefer in the future to remain so called MOPs, "Mainly Original Substrate Persons"[16] who do not want to store their substrate completely in another media, be it the cyberspace or a hard disc.

The other problem from the point of view of ethics is the price of the project "immortality by machines". Almost-immortality is, as Jaron Lanier remarks, only likely to

12 Cf. VILLÖ HUSZAI: „Der Kampf um die Vorherrschaft der Intelligenzen. Die technische und literarische Phantasie vom Maschinenmenschen", *Neue Zürcher Zeitung* Nr. 70, 24./25. März 2001, p. 57, und RAY KURZWEIL: *The Age of Spiritual Machines: How we will live, work and think in the new age of intelligent machines*, London (Orion Business) 1999.

13 Cf. RAY KURZWEIL: „Die Maschinen werden uns davon überzeugen können, daß sie Menschen sind. Nur weil Europa die technologische Revolution verschläft, muß nicht die ganze Welt vor sich hin träumen", *Frankfurter Allgemeine Zeitung* Nr. 153, 5. Juli 2000, p. 51.

14 Cited after ANNETTE OHME-REINICKE: „Fortschritt als Provokation", *Neue Zürcher Zeitung*, 24. März 2001

15 Cf. RODNEY A. BROOKS: „Das Fleisch und die Maschine. Wie die neuen Technologien den Menschen verändern werden", *Frankfurter Allgemeine Zeitung* Nr. 205, 4. September 2000, p. 49, und RODNEY A. BROOKS: *Robot: The Future of Flesh and Machines*, London (Penguin Press Science) 2003.

16 Cf. VILLÖ HUSZAI: „Der Kampf um die Vorherrschaft der Intelligenzen", *loc. cit.*

be feasible for the ultra rich since the substitution of organs by machines is extremely costly. The social inequality caused by extensive organ substitution will be enormous since one can assume that all humans will be ready to invest their whole net wealth for immortality or will be ready to pay almost every price for it. Within the family, this will create considerable problems if parents will invest their whole life income for immortality. The transfer by inheritance between generations is terminated.

V. Virtual Reality as a Concept of Theological Origin

The cyberspace and theology share the conviction that the virtual is a third modus of being between possibility and reality. Virtuality is possibility as reality. Both, the cyberspace and theology, share the conviction that the virtual is not only appearance or only seeming reality. The virtual as being appearance only would not be interesting at all.

The latest edition of a dictionary of theology gives the following examples for virtual reality under the entry "Virtuality".[17] The first exemple are truths that are only virtually and not directly revealed. Virtually revealed truths are those that are not revealed directly but are gained by conclusions from directly revealed truths. Virtual is secondly the virtual distinction in God's unity, the trinity. Trinity is on the one hand a real distinctiveness of persons who are however not really distinct since they are three persons as unity. The distinction of the three divine persons in trinity is therefore only a virtual distinction. Virtual is thirdly God's acting in creation. Theology calls God's action in creation "*virtualiter transeuns*", virtually transcending into the creation.

The concept of the virtual is used here for the solution of a grave theological problem. If God is inalterable, but has created the creation he is different or changed after having created the creation. One says, however, that God is inalterable. If he is inalterable he cannot be a real creator or producer since with the creation something else has come into being and God would be altered after the creation, he would have become a creator which he was not before the creation. The problem is solved in the following way: Since there cannot exist anything that is completely outside of God since this would violate God's unity and perfection, one has to assume that the progression of the

17 W. LÖFFLER, D. MORAT: Article „Virtualität, virtuell", *Lexikon für Theologie und Kirche*, ed. by W. Kasper et al., 3rd ed., Freiburg (Herder) 2001, col. 805.

creation out of God is only virtually transcending, this progression of the creation from God is only virtually transcending. God's transcendence into creation is only virtual.

The concept of the virtual transcendent can be used for an analogy for the relationship between humans and the cyberspace. Humans are in a virtually transcendent relationship with cyberspace since humans created the space without transcending into it. The reality of the cyberspace lies on the one hand outside of the social space of human relationship since it is invisible and human do not live with their body in this space. On the other hand, the human virtual creation belongs to the social space of humans and modifies the social space by extending its capabilities and possibilities. The cyberspace is a space that lies outside of society and belongs at the same time to the reality of society. The cyberspace is only in a virtual, but not in a substantial relationship with the world of humans.

VI. The Centrality of the Financial Functions of the Cyberspace and the Virtual Reality of the Financial Markets

The virtual financial markets of online banking, of online brokerage and online trading are most probably the most important and consequential innovation that has been produced by the internet. The influence of the internet has been felt most strongly in the field of the financial markets since the internet created a completely new capital market[18] that took over the functions of the traditional stock market, particularly the allocation of capital, in a more subtle and more direct way for the following reasons: The internet enables the public to participate in mass speculation. Mass speculation implies that large strata of the population participate in stock market speculation. The internet makes this participation possible. It realizes, by way of online trading, a form of people's capitalism that integrates all groups of the population, and not only the classical owners of capital, into the capital market. If in the United States today one half of the households own wealth in stocks, an enormous change of capital ownership in comparison to the traditional distribution of capital income and labor income is caused by this

18 See also P. KOSLOWSKI: „Welche Werte prägen den Kapitalmarkt? Zur Ethik der Spekulation", in: TH. BUCHHEIM, R. SCHÖNBERGER, W. SCHWEIDLER (Eds.): *Die Normativität des Wirklichen. Über die Grenze zwischen Sein und Sollen*, Stuttgart (Klett-Cotta) 2002, pp. 286-311, and J. R. BOATRIGHT: *Ethics in Finance*, Malden, Mass./Oxford (Blackwell) 1999.

development. The old "contradiction of capital and labor" is modified by the phenomenon of a people's capitalism in which large strata of the population own and can administer capital via online trading.

By the extension of the number of capital owners and of those speculating in the stock market, an extension of the ability to learn in investment takes place. Far greater circles of the population participate in investment decisions compared to former times. Banks have recognised that, in the last years, investment banking and financial mediation for the capital market have substituted the classical task of loan giving in the banking business.

The emerging people's capitalism will further develop in the future and will increase the capacity to learn in capital investment. The precondition for people's capitalism is the internet, since speculation via online trading and with the help of online brokers has reduced the transaction costs of stock market speculation considerably. There are, however, linked some typical problems of virtualisation with online brokerage and online trading. They are caused by the virtual reality syndrome, the loss of reality by fictionalisation. An example for this developing dangers in online trading is the churning of day traders. Churning describes the fact that online trading seduces day traders to buy and sell shares too often with the result that they end up with very high transaction costs that eat up their capital gains and form an advantage only for the online banks or online brokerage firms to which the day traders pay provision for every transaction. The online day traders end up with losses since, even if their shares make profit, they sell and buy the shares in their portfolio too often. The provision for the trading firms eat up their profits and leave the traders in the end with losses.

Why is the virtual reality of online trading a problem here? The answer is that in online trading the virtual space of action also reduces the corporeal constraints and barriers to such a degree that the trading persons are tempted to trade too often and too easily. Online trading supports the tendency to take fictions for reality also in the financial markets. It is possible to trade anonymously, easily and quickly in the internet whereas one had had to go to the bank or to call a person at the bank in order to sell or buy shares in former days. Since too frequent trading might have enervated the broker or the bank employee, one would have been hindered by the personal interactions with the

financial intermediaries to trade too often. In the anonymous online trading centers these barriers have fallen.[19]

Another development of great importance for the financial markets made possible by the internet is the development of online future markets, the markets for future contracts about all kinds of raw materials, currencies, and goods. By the future markets, a new comparably low cost insurance against business cycle price fluctuations has become possible that is not imaginable without the internet. These insurances against future fluctuations of prices can be organized according to groups concerned. Professional groups or industries can insure themselves against price fluctuations on future markets if the transaction costs for futures will decrease due to the lower transaction costs induced by the internet.

Fishermen, for example, have the problem that the prices for fish fluctuate and that considerable problems can arise for the stabilization of their income. They could insure themselves at least partially by way of future contracts about fish and could sell today already the fish of the next year. Futures cause costs, of course. The fishermen will not receive the full price. The other difficulty is that futures can only insure against business cycle fluctuations but not against structural crises if there is, e.g., not enough fish anymore. In the future market a new field of insurance will be opened that has become possible through the internet and in which one will observe further innovations.

One objection frequently raised against the electronic economy is that the share prices for the electronic economy have been virtual in the sense of misleading by their appearance. The internet firms have been reproached that they have created an atmosphere of virtual reality around themselves and in the stock market which has led to valuations of these firms in the share market which do not correspond to economic reality and have become themselves simulated or virtual. Robert Hall of Stanford University has introduced the concept of "e-capital". There is, Hall claims, a surplus in the capital value of electronic economy firms that does not show in the balance sheet of these firms. The electronic economy accumulates a capital which is not accounted for in the normal book-keeping of the assets of electronic economy firms. Many of the internet firms have had price/earnings ratios that have been completely abnormal. How can

19 RICHARD T. DE GEORGE: *The Ethics of Information Technology and Business*, Oxford (Blackwell) 2003 (= Foundations of Business Ethics, Vol. 3), p. 9, calls the phenomenon of the depersonalization of exchange relationships the "virtual reality syndrome".

this be explained since it contradicts normal valuations of shares? The .com firms should have been valuated much lower and their share prices should have fallen earlier. Since this had not been the case there must have been something that has caused this higher valuation of .com firms. Hall calls the price difference between .com and old economy firms the e-capital, a sort of surplus value which the market is not yet able to account for properly.

The question is what happened to this e-capital in the years 2000-2002? It vanished. Nevertheless, Hall points to an important point: The potential of the electronic economy has not been exhausted yet, its use is still in its beginnings. It is visible today that the possibilities of using the electronic economy are enormous. If investors anticipate the future potential it is not irrational to say that these firms may be worth more than the traditional methods of valuation account for.

The second argument for this anticipation of future increases in value is that many services in the internet are not yet sufficiently priced. There is not an economically sufficient exclusion of users that do not pay. At present, the internet economy includes an element of utopia since many of its services are not priced and do not exclude nonpaying users. This utopian element should not be criticized since it creates a space for new ideas about using the internet. From the point of view of the economics and the logic of the evolution of markets, one must assume that this free uses will be eliminated more and more in favor of priced forms of uses since otherwise the enormous investments in the internet cannot pay off.

If one takes into consideration the possibilities that are opened up by the internet it is not justified to describe the internet revolution as a bubble of speculation only. Rather, it makes sense that the investment in a new technology is larger than it appears to be reasonable from the point of view of traditional accountancy. If we draw an analogy from natural evolution we find that also natural evolution knows phenomena of evolutionary overspending. Even in the animal world, more is often invested than seems to be necessary. This investment happens in order that a new path of evolution can be reached. Something similar seems to have happened in the electronic economy. It is too early to decide whether the new virtual reality moved here too much in the direction of virtual reality as mere appearance or whether a new path of economic evolution has

been started by the mass speculation of the beginning people's capitalism in internet shares and by means of online trading.